Lobbying and Legislative Bargaining

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Abstract

We examine the effects of the interaction between lobbying and legislative bargaining on policy formation. Two systems are considered: a US-style congressional system and a European-style parliamentary system. First, we show that the policies generated are not intermediate between policies that would result from pure lobbying or from pure legislative bargaining. Second, we show that in congressional systems the resulting policies are strongly skewed in favor of the agenda-setter. In parliamentary systems they are skewed in favor of the coalition, but within the coalition there are many possible outcomes (there are multiple equilibria) with the agenda-setter having no particular advantage. Third, we show that equilibrium contributions are very small, despite the fact that lobbying has a marked effect on policies.
1 Introduction

Economic policymaking in modern democracies generates a great deal of special-interest politics. In policy areas such as public finance, trade policy, and regulation, policy decisions create benefits for well-defined groups with the cost borne by society at large. Policy programs of this type, by definition, give rise to a multidimensional policy space. Given the difficulties with aggregation of preferences in such situations, understanding the policy outcomes requires specifying the institutional details of the policy making process.

Different branches of political economics have taken this route. They have, however, focused on different aspects of the political process and thus suggested different determinants of the outcomes. Electoral models restrict electoral competition to two candidates, highlighting the importance of the distribution of voter preferences across groups (Lindbeck and Weibull, 1987, Dixit and Londregan, 1996). Lobbying models make specific assumptions about the lobbying process and the role played by contributions, highlighting the importance either of informational asymmetries or of the organizational pattern among interest groups (Austen-Smith and Wright, 1992, Grossman and Helpman, 1994). Legislative models suggest specific rules for decision making, highlighting the importance of agenda setting, the allocation of policy jurisdiction across legislators serving as ministers or committee chairs, and the sequential process for proposals and amendments (Romer and Rosenthal, 1979, Shepsle, 1979, Baron and Ferejohn, 1989).

Attempts to formally integrate these differing approaches to special interest politics have been more scarce. Some work deals with the interaction between elections and legislative behavior (see, for example, Austen-Smith and Banks, 1988, Baron, 1993, McKelvey and Riezman, 1992, Chari, Jones and Marimon, 1997), and other work deals with the interaction between elections and lobbying (see, for example, Austen-Smith, 1987, Baron, 1994, Grossman and Helpman, 1996, Besley and Coate, 2001). But when it comes to the interdependencies between lobbying and legislation there is very little formal work. Denzau and Munger (1986) propose a reduced-form model where interest groups give contributions to legislators who choose effort on different legislative activities so as to maximize expected votes. Snyder (1991) analyzes contributions by lobbies to legislators who have different ideal points in a spatial voting model. Groseclose and Snyder (1996) study a game where two lobbies buy the votes of legislators who will take a decision on a public
In this paper, we take a few further steps towards a better understanding of how lobbying and legislation interact and how this hinges on the political institutions in place. Specifically, we study a sequence of games in which policy decisions are made by a number of legislators under alternative legislative structures. As in some recent work on comparative politics (Diermeier and Feddersen, 1998, Persson, Roland and Tabellini, 2000), we try to contrast salient features of a US-style congressional system and a European-style parliamentary system, by examining alternative legislative bargaining processes which entail different allocations of agenda-setting and veto powers, implying different degrees of legislative cohesion.

We assume that all groups in society are organized and that every group makes contributions to individual lawmakers. Our focus is on the effects of contributions on legislation. Given the specific rules of legislative decision making, contributions are made strategically, to influence the design of policy proposals as well as lawmakers’ voting behavior in the legislature. In every regime we characterize the equilibrium policy outcome and the equilibrium pattern of contributions.

At a general level, we study strategic interactions in a setting with multiple principals and multiple agents. This is a difficult topic. We therefore use simplifying assumptions in order to make progress. Our aim is to point out the importance of the interactions between lobbying and legislative bargaining. We therefore focus more on the methodology than on results. Some of our results are sensitive to the analytical framework and should be treated with caution.

A general result is that the interactions in the political process may produce outcomes that are not convex combinations of outcomes suggested by the isolated analyses of lobbying and legislative bargaining. For example, in a symmetric version of our basic congressional regime a standard common-agency model of lobbying would predict equally distributed policy benefits, while a standard legislative bargaining model would predict a bias towards the group associated with the agenda-setting legislator, with a default payoff to a minimum winning coalition. Our combined model instead produces an agenda-setter’s-group-takes-all result.

Another general result is that lobbying plays a critical role in shaping the policy outcome, even though equilibrium contributions are small. Moreover, in the equilibrium of the congressional system the proposal of the agenda-setting legislator commands universal support in congress despite the stark
redistribution. This is interesting, in light of the puzzle in the literature on the US congress: distributive policy bills are typically passed with large majorities, even though one might have expected Riker’s “size principle” of minimum-winning coalitions to apply with particular force to just those decisions.\footnote{See Collie (1988) and Inman and Rubinfeld (1997) for surveys of the literature on distributive politics.} In our setting the desire to form minimum winning coalitions prevails, but has very different consequences.

Finally, our results suggest that the structure of political institutions matters a great deal. The concentration of agenda-setting powers in the coalition supporting the executive in parliamentary systems, and the effective veto powers of these coalition members, produce greater legislative cohesion in parliamentary systems, which affects the strategic interaction between lobbies as well as between lawmakers. This, in turn, affects substantially the distribution of policy benefits across groups.

In Section 2 we construct a simple model of local public goods financed out of a given budget. We then characterize equilibrium policies and contributions in congressional and parliamentary settings, assuming that lawmakers care only about contributions. We extend these results in Section 3 to lawmakers who care both about contributions and about the welfare of their constituency. In Section 4 we relax the simplifying assumption that policy just distributes a given budget, by allowing for a set of policy instruments that impose more general costs and benefits on different groups in society. In Section 5 we discuss how one might relax some of the specialized assumptions, such as the fixed associations between lobbies and legislators, the take-it-or-leave-it nature of the legislative proposals, and the fixed group membership association, and how that might affect the results. In Section 6 we draw some conclusions.

## 2 Congressional and Parliamentary Systems

Consider an economy with a total population of size $N$. Each citizen belongs to one of three groups, indexed by $i \in \{1, 2, 3\}$, such that $\sum_i N_i = N$, where $N_i$ is the size of group $i$. There is no within-group heterogeneity; i.e., members of a particular group are identical. We also assume that the size of each group is fixed (see, however, Section 5).
Every group $i$ forms a lobby. We ignore collective-action problems and assume that every interest group tries to influence the allocation of resources. The political system has a budget $B$ that needs to be allocated across the groups. For now we take this budget to be fixed. Letting $b_i$ denote the budget allocation to group $i$, a feasible allocation is a vector $b = (b_1, b_2, b_3) \geq 0$ such that $\sum_{i=1}^{3} b_i = B$. The impact of the budget allocation on the well-being of a representative individual from group $i$ is given by $H(b_i, N_i)$. This function is increasing and concave in $b_i$ and possibly decreasing in $N_i$. Moreover, $H(0, N_i) = 0$, independently of group size. This simple setting is extended in Section 4 to allow for more general policy instruments.

The lobby of group $i$ raises money from members in order to influence the policy outcome $b$. As a result, the net benefit of a representative individual of group $i$ is

$$u_i = I_i + H(b_i, N_i) - c_i,$$

where $I_i$ is per-capita income net of taxes and $c_i$ is the payment for lobbying activities.

Three lawmakers, indexed by $l \in \{1, 2, 3\}$, participate in the policy decision. We start out by assuming that these lawmakers are motivated by money only; they support the decision that maximizes contributions. This we remedy in Section 3, however, where we study the more general case of lawmakers who care about a weighted average of contributions and the welfare of their associated groups.

Unlike the groups in standard common agency models, our interest groups do not lobby a single policy-making entity — the “government” — for policy favors, because no such entity exists. Instead, the lawmakers jointly determine the policy. Throughout the formal analysis we assume a fixed association between lawmakers and interest groups; every interest group is associated with exactly one lawmaker to whom it makes contributions (see, however, the discussion in Section 5). Taking account of these contributions the lawmaker decides how to vote on policy proposals and what policies to propose when a chance arises. We associate lawmaker $l$ with interest group $i$ so that $l = i \in \{1, 2, 3\}$. For now, lawmaker $i$ acts to maximize her contributions $N_i c_i$.

We can interpret this setting in several ways. It is possible to think about every group as consisting of residents of a particular voting district. In this case $b_i$ may represent public investment in the district’s roads, schools, police force or water system. In short, $b_i$ can be thought of as district-specific local
public goods or government-provided private goods. Alternatively, groups may consist of workers in particular occupations (such as accountants or mechanics), or workers in particular industries (such as steel or printing), who are represented by a labor union. In this case \( b_i \) may represent subsidies to group-specific health care or pensions, sick leaves or safety devices in the workplace. In either case, the function \( H(\cdot) \) measures the value of these subsidies.

We can think about a lawmaker as a single individual. The assumption of three lawmakers is then motivated by convenience: three is the smallest number that allows us to meaningfully study coalition formation. Our results do not change when there is a larger number of groups and legislators, as long as they are equal in number and every legislator is paired with one lobby and every lobby is paired with one legislator. But the assumption of fixed associations between groups and individual legislators becomes harder to justify when the number of legislators and lobbies becomes large. An alternative is to think about every lawmaker as a collection of individuals within a legislature, who — like the members of a lobby — have already solved a collective-action problem. The members of such a legislative group act in unison. Under this interpretation every lawmaker in a US-style congressional system may represent a state (or regional) delegation, or the members of a particular congressional committee. In a parliamentary system with proportional representation and several parties, every lawmaker may instead represent a small political party, whereas in a system with majoritarian elections and few parties, every lawmaker may represent a faction of a large party.\(^2\)

### 2.1 Congressional policy

One distinguishing feature of congressional systems of the US type is that agenda-setting powers over economic legislation are relatively dispersed among individual legislators, according to their positions on the powerful standing

\(^2\)In the US the bulk of campaign contributions by individuals are made by inhabitants of the lawmaker’s own district, whereas the bulk of contributions by PACs are made to members of committees that have jurisdiction over decisions of importance for the donors. Less systematic evidence is available about patterns of lobbying in the parliamentary systems of Europe. In several European countries, however, tight links exist between certain political parties and specific interest groups, such as trade unions or agricultural groups (Liebert (1995)).
congressional committees. Another feature is that legislative cohesion is relatively low, meaning that coalitions supporting legislative proposals are not very stable over time; they tend to regroup from issue to issue. These two features stand out in a comparison to the normal functioning of a parliament in which agenda-setting powers are concentrated in the hands of the government, and where the ruling coalition tends to stick together so as to avoid a costly government crisis (see, for example, Lees and Shaw, 1979, and von Beyme, 1995). To highlight these two features we assume that policy is set via a simple legislative bargaining game, in the style of Romer and Rosenthal (1989) and Baron and Ferejohn (1989).

Formally, our policy game has four stages. First, Nature randomly selects one of the lawmakers to be the agenda setter, \( a \in \{1, 2, 3\} \). Second, the three interest groups offer simultaneously and noncooperatively contribution schedules as functions of their budget allocations. Every group offers two schedules to its lawmaker. One schedule applies when the lawmaker supports the agenda setter’s proposal, another schedule applies when the lawmaker votes against the agenda setter’s proposal. Third, legislator \( a \) makes a policy proposal to congress. Fourth, congress votes on the proposal. The proposal is adopted if it wins a majority and defeated otherwise. In case of defeat congress implements the default policy \( b^d \geq 0 \), \( \sum_{i=1}^3 b^d_i \leq B \). We thus only require that total transfers provided by the default policy do not exceed the available budget.\(^4\)

This game is played under complete information. All players observe the contribution schedules, the proposal by the agenda setter, and the votes in congress. We restrict the contribution schedules of group \( i \) to be conditioned only on payoff-relevant aspects of the policy. In the simple cake-splitting game at hand, this means that \( C^y_i (\cdot) \), the contribution by each member of lobby \( i \) to lawmaker \( i \) when she supports the agenda setter’s proposal, depends only on the proposed \( b_i \). \( C^n_i (\cdot) \), the per-member contribution of lobby \( i \) to lawmaker \( i \) when she votes against the agenda setter’s proposal, depends only on the budget allocation to \( i \) in \( b^d \), which is a constant. Therefore, a

\(^3\)In this section the results do not depend on the way in which the agenda-setter is chosen. For this reason the first stage can be replaced with other alternatives, such as a deterministic rule based on seniority or election outcomes.

\(^4\)We could have assumed instead that the default allocation exhausts the entire budget or that the default budget is smaller. The former assumption fits well certain policies, such as entitlement programs, but does not fit others, such as investment in infrastructure. In the latter case the default allocation may well be lack of action; i.e., \( b^d_i = 0 \) for all \( i \).
strategy of lobby \( i \) is a function \( C^y_i(b_i) \geq 0 \) and a constant \( C^n_i \geq 0 \), such that given a proposal \( b^a = (b^a_1, b^a_2, b^a_3) \) by the agenda setter:

\[
c_i = \begin{cases} 
C^y_i(b^a_i) & \text{when } l = i \text{ supports the proposal} \\
C^n_i & \text{when } l = i \text{ votes against the proposal}.
\end{cases}
\]

We require the solution to this game to be subgame perfect, meaning that the agenda setter correctly forecasts the support for her proposal and that lobbies forecast correctly how the policy outcome depends on the structure of their contribution schedules.

It turns out that all equilibria of the congressional system have three common features: (a) the allocation equals the agenda setter’s proposal; (b) the entire budget is allocated to the agenda setter’s group; and (c) contributions equal zero. Although many equilibria of this type may exist, they differ only in the associated contribution schedules. This is an inessential difference, however, because it affects no payoff-relevant variable.

We start by demonstrating why feature (c) must hold. Suppose we have an equilibrium with a budget allocation \( \hat{b}^a = \hat{b}^a_a \), such that \( 0 \leq \hat{b}^a_a \leq B \), and with contribution schedules \( [\hat{C}^y_i(b_i), \hat{C}^n_i] \) for \( i = 1, 2, 3 \). Given these contribution schedules, the agenda setter and at least one other lawmaker have to support the proposed allocation. Thus, it must be that \( \hat{C}^y_a(\hat{b}^a_a) \geq \hat{C}^n_a \) and \( \hat{C}^y_h(\hat{b}^a_h) \geq \hat{C}^n_h \) for some \( h \neq a \). But then whenever \( \hat{C}^y_h(\hat{b}^a_h) > \hat{C}^n_h \), group \( h \) has an incentive to modify its contribution schedule until it reaches \( \max [\hat{C}^y_h(b_h) - \varepsilon, 0] \) for some \( \varepsilon > 0 \), such that \( \hat{C}^y_h(\hat{b}^a_h) - \varepsilon \geq \hat{C}^n_h \). This modification does not affect the agenda setter’s behavior and saves money for group \( h \). Therefore \( \hat{C}^y_h(\hat{b}^a_h) = \hat{C}^n_h \).\(^5\) But the lobby has still not done its best unless \( \hat{C}^y_h(\hat{b}^a_h) = \hat{C}^n_h = 0 \). For as long as the equilibrium contributions are positive, the lobby can reduce each one of its schedules by \( \varepsilon > 0 \), to \( \max [\hat{C}^y_h(b_h) - \varepsilon, 0] \) and \( \hat{C}^n_h - \varepsilon \), without affecting the outcome \( \hat{b}^a \) and the support of lawmakers \( a \) and \( h \) for the proposal. This way, the lobby saves \( \varepsilon \) in contributions. We therefore conclude that \( \hat{C}^y_h(\hat{b}^a_h) = \hat{C}^n_h = 0 \). A similar argument establishes that \( \hat{C}^y_a(\hat{b}^a_a) = \hat{C}^n_a = 0 \). Finally, the remaining group

\(^5\)Formally, we assume throughout that a lawmaker who is indifferent between a proposal and the default outcome always supports the proposal. The only role of this assumption is to resolve an open-set problem and thus to simplify the presentation of our results.
\[ j \notin \{a, h\} \] does not make a positive contribution in equilibrium, because if it did, it could reduce its contribution without affecting the outcome. We therefore conclude that equilibrium contributions all equal zero.

Next we show why feature (b) must hold when feature (a) holds. Consider lobby \( a \). Suppose that, instead of \( \hat{C}_a(y) \) and \( \hat{C}_n \), it were to propose, say, the contribution schedules \( C'_a = 0 \) and

\[
C'_a(b_a) = \begin{cases} 
\varepsilon & \text{for } b_a = B \\
0 & \text{for } b_a < B,
\end{cases}
\]

where \( \varepsilon > 0 \). With these new schedules from lobby \( a \) and with \( \hat{C}_i(b_i) \) for \( i \neq a \), the agenda setter can do no better than proposing \( b_a^e = B \) and \( b_i^e = 0 \) for \( i \neq a \). All allocations \( b_a^e < B \) bring her zero contributions, independently of whether the proposal is supported or not, but \( b_a^e = B \) brings her \( \varepsilon \) in contributions and the support of lawmaker \( h \). For a penny of contributions the agenda setter is thus happy to give all resources to group \( a \), a proposal that wins a majority of votes. Any equilibrium with a majority-supported budget allocation \( b_a^e \) must thus transfer all resources to the agenda setter.

So far, we have seen that equilibrium contributions must equal zero and that, whenever the agenda setter's proposal is accepted in equilibrium, her interest group receives the entire budget. It is easy to see the intuition behind the latter result, by considering the competition between the non-
agenda-setting lawmakers $h$ and $j$. In Figure 1 allocations to the agenda setter are measured on the horizontal axis from right to left while allocations to $h$ and $j$ are measured from left to right. Contributions by lobbies are measured along the vertical axis. The figure depicts one contribution schedule for each interest group. For an approved proposal, every group offers zero contributions up to a budget allocation $\hat{b}_i$ and rising contributions thereafter. Faced with these schedules, the agenda setter would like to allocate as much as possible to her own interest group. By proposing $b_a = B$ and $b_i = 0$ for $i \neq a$ she can obtain the support of either $h$ or $j$, who get zero contributions when the proposal is approved, but also when it is rejected (recall that $C_i^m = 0$ for all $i$). Moreover, suppose that to induce a vote of support the agenda setter needs to offer legislator $i$ a positive budget $b_i > 0$. Among all the allocations that win a majority, $a$ then prefers to offer $h$ a budget $b_h = \hat{b}_h$ and the remaining part $B - \hat{b}_h$ to her own group. She cannot offer $h$ less and still obtain $h$’s support, while she needs to offer $j$ more for her support. But rather than the schedule in Figure 1, lobby $j$ would then offer a schedule with $\hat{b}_j$ just to the left of $\hat{b}_h$, knowing that this request of a smaller budget makes her legislator the preferred partner of the agenda setter. This sort of “Bertrand competition” between $h$ and $j$ drives both $\hat{b}_h$ and $\hat{b}_j$ down to zero.

The only remaining possibility that does not allocate the entire budget to group $a$ is that feature (a) fails to hold; that is, a majority of legislators support the default policy. To see why this is not an equilibrium for $b_a^d < B$ suppose for the moment that it is; i.e., $\hat{b} = b_d^d$, and that the equilibrium contribution functions are $[\hat{C}_i^y (b_i), \hat{C}_i^m]$ for $i = 1, 2, 3$. By implication two legislators, $h \neq a$ and $j \neq a$, must vote against $a$’s proposal. Repeating the previous arguments it has therefore to be that

$$\hat{C}_i^y (b_i^d) = \hat{C}_i^m = 0 \text{ for } i \neq a .$$

In this event, however, lobby $a$ has not offered the best possible contribution schedules. If it were to offer, say, $C_a^m = 0$ and (2), then $a$ could do no better than to propose $b_a^d = B$ and $b_i^d = 0$ for $i \neq a$. All allocations $b_a^d < B$ bring her zero contributions in this case, independently of whether the proposal is supported or not, while $b_a^d = B$ and $b_i^d = 0$ for $i \neq a$ bring her $\varepsilon$ in contributions and the support of lawmakers $h$ and $j$ who are indifferent between the agenda setter’s proposal and the default policy. Again, for a penny of contributions the agenda setter proposes all the resources to group $a$, and this proposal wins a majority. This completes the proof that features
To see a specific example of this sort of equilibrium, consider the truthful contribution functions

\[
C_i^y(b_i) = \begin{cases} 
\max \left[ H(b_i, N_i) - H(B, N_a), 0 \right] & \text{for } i = a \\
H(b_i, N_i) & \text{for } i \neq a
\end{cases}
\]

and

\[ C_i^n = 0 \quad \text{for all } i = 1, 2, 3. \]

Given these contribution schedules, we have to show that: (i) the agenda setter can do no better than to propose \( b^a_a = B \) and \( b^a_i = 0 \) for \( i \neq a \); (ii) this proposal is supported by a majority of legislators; and (iii) no lobby by changing its contribution functions can induce an outcome that it prefers. First, even though an agenda setter offering \( b^a_a = B \) and \( b^a_i = 0 \) for \( i \neq a \) gets zero contributions if a majority supports the proposal, no other feasible proposal raises more money. Second, the other lawmakers are happy to support this proposal: none of them gets any contribution if the proposal is approved, but they also receive nothing if it is defeated. Thus, the agenda setter can do no better than to offer \( b^a_a = B \) and \( b^a_i = 0 \) for \( i \neq a \), and this proposal wins a majority.

Finally, no lobby has an incentive to redesign its contribution schedules. Lobby \( i = a \) gets the entire budget \( B \) and makes no contributions (in equilibrium), an outcome that cannot be improved. Each one of the other groups, \( i \neq a \), already offers its lawmaker contributions equal to its entire benefit of the budgetary allocation, \( C_i^y(b_i) = H(b_i, N_i) \). If it were to offer a higher contribution at some \( b_i > 0 \) and a proposal with this \( b_i \) were adopted, the group would be worse off than in the proposed equilibrium. The only remaining option is to offer a positive value of \( C_i^n \) to induce a vote against the equilibrium proposal, hoping that it will be defeated in favor of the default policy. For \( 0 < C_i^n < H(b_i^4, N_i) \) the lobby indeed prefers the default policy. But there is no hope of defeat. Given the contribution schedules of groups \( j \), \( j \neq i, a \) and \( a \), the agenda setter obtains support from \( j \) for her proposal and does not need \( i \)'s vote. Lobby \( i \) thus stands to gain nothing from redesigning its own schedules.

The results in this section can be summarized in

\footnote{These schedules are truthful in the sense that whenever contributions are positive the marginal contribution truthfully reflects the marginal benefit of the budgetary allocation \( b_i \) (see Bernheim and Whinston (1986) and Dixit, Grossman and Helpman (1997)).}
Proposition 1 In every equilibrium of the congressional system: (a) the budget allocation equals the agenda setter’s proposal; (b) for every $a \in \{1, 2, 3\}$ the budget allocation is $b_a = B$ and $b_i = 0$ for $i \neq a$; and (c) contributions equal zero.

The equilibrium allocation of the budget is extreme in this model. Of course, the agenda setter has a lot of power in our congressional system, given our assumption that decisions are made on the basis of take-it-or-leave-it proposals (closed rule). Because of the competition between the remaining legislators, she is able to extract the entire surplus available to the legislative body. Anticipating this outcome the agenda setter’s lobby can in turn design contribution schedules that extract the entire surplus from its bilateral relationship with the lawmaker. As a result lobby $a$ gets the entire surplus from the political process. Despite the extreme distributive outcome the equilibrium policy has universal support, in the sense that no lawmaker has an incentive to vote against the agenda setter’s proposal. In section 5, we discuss how this result will be modified by allowing amendments to the initial proposal (open rule).

Some observers have taken the small contributions to American congressmen (relative to the benefits of special-interest legislation) to imply that lobbying by means of campaign contributions is not an important phenomenon. Our model illustrates, however, that lobbying can be very important even when equilibrium contributions are small (zero).

To see this, consider an alternative framework without any lobbies and where the budget allocation $b$ is determined in legislative bargaining a la Baron and Ferejohn (1989), with legislators serving as perfect delegates of their constituencies (groups). Legislator $i$ thus seeks maximum utility for her constituency by maximizing $b_i$. In analogy with our setting, consider only a single round where the agenda setter makes a take-it-or-leave-it proposal, which is adopted in favor of a default policy if it wins a majority of votes. Under these circumstances, the agenda setter’s best course of action is to seek support from the legislator whose group has the smallest default budget, $m = \arg \min_i \{b^d_i \text{ for } i \neq a\}$, offer $b^d_m$ to group $m$, $B - b^d_m$ to group $a$ and zero to the third group. As this allocation is supported by $m$, it wins a majority.

Ferejohn (1986) makes a related argument in a setting with retrospective voting. He finds that a single policymaker captures all the surplus in the relationship with his constituency when the latter consists of different groups of voters that compete with each other for policy favors given by the policymaker in exchange for their vote.
Unless \( b_m^d = 0 \), the result is quite different from Proposition 1 in which the agenda setter gives her own group the entire budget.

Compared to the Baron-Ferejohn benchmark with direct representation, adding interest groups thus leads to a more skewed budget allocation. In this comparison, however, we are changing the objective function of politicians: they care only about the welfare of their constituency under direct representation, while they care only about contributions under lobbying. In Section 3 we consider a setting in which every lawmaker cares about a weighted average of contributions and the welfare of her group. The Baron-Ferejohn specification is then one extreme, in which the weight on contributions is zero, and the specification in this section is the other extreme, in which the weight on welfare is zero.

Our policy outcome also differs starkly from the predictions of a common-agency game, where decisions are taken by a single decision maker. For example, when all default budgets are the same and all groups are of equal size, a simple common-agency framework predicts equal budget allocations to all while in our congressional system the agenda-setter wins all.\(^8\)

### 2.2 Parliamentary policy

In parliamentary systems of the European type cabinet ministers control the legislative agenda and the survival of the government plays a key role in the formation of stable parliamentary majorities. Diermeier and Feddersen (1998) have shown how legislative cohesion emerges as the endogenous outcome of a legislative bargaining game in European-type parliamentary systems, and lack of cohesion emerges in US-type congressional systems, due to the presence and absence of a confidence requirement for the executive. A richer model of a parliamentary system would explicitly model the causes and consequences of government breakup, as well as the government formation phase. We take a shortcut, however, assuming that two of the three lawmakers, say \( k \) and \( l \), form a government and decide on policies via intragovernmental bargaining, with veto rights for the non-proposing member of the coalition (thereby implicitly capturing the ability to trigger a breakup of government with prohibitive costs for the proposing member).

\(^8\)Persson and Tabellini (2000) study a policy problem close to the one in this paper and show how various models of special-interest politics produce different predictions about the way in which preferences get aggregated into policy outcomes.
Formally, the parliamentary policy game evolves in four stages. First, nature picks randomly two legislators that form a government (a coalition). We let \( G = \{k, l\} \) be the set of lawmakers in the coalition, where, as before, every legislator \( i \in G \) is interested only in her own contributions. Second, nature picks randomly a member of the coalition, say \( g \in G \), to make a proposal \( b^g \). Third, the interest groups offer contribution schedules, as in the congressional system. Fourth, members of the coalition decide on the proposal in a single-round noncooperative bargaining. Thus, if the other member of the coalition, say \( q \in G, q \neq g \), supports \( b^g \), it is implemented. If not, the default policy \( b^d \) is implemented.

As the coalition forms a majority and the non-proposing coalition member has veto rights, the vote of the nonmember, \( i = t \), is immaterial for passing legislation. Groups associated with coalition members are thus able to jointly appropriate the entire budget \( B \), and \( b^q_t = 0 \). We therefore focus on the coalition members, who effectively bargain over how to split between themselves the available surplus; namely the outside group’s default allocation plus the difference between the actual and default budgets.

Consider an equilibrium with an allocation \( \hat{b} = \hat{b}^g \geq 0 \), where \( \sum_{i \in G} \hat{b}^g_i = B \), and with contribution functions \( \hat{C}_i^y (b_i), \hat{C}_i^n \) for \( i \in G \). Then

\[
\hat{b}_g = \arg \max_{0 \leq b \leq B} \hat{C}_g^y (b) \quad \text{subject to} \quad \hat{C}_q^y (B - b) \geq \hat{C}_q^n.
\]

Moreover, \( \hat{C}_g^y (\hat{b}_g) \geq \hat{C}_g^n \). In other words, the proposing coalition member allocates the budget in a way that maximizes her own contributions subject to her partner getting at least as much as at the default allocation. Of course, \( g \)'s equilibrium contributions also have to be at least as large as her contributions at the default allocation.

Now consider lobby \( q \). Knowing that the allocation is determined by (3), it does not choose a schedule such that \( \hat{C}_q^y (\hat{b}_q) > \hat{C}_q^n \). By choosing

---

9 The resulting equilibrium allocations do not depend on whether \( k \) or \( l \) makes the proposal, as we shall see below. For this reason it does not matter whether \( g \) is chosen randomly or according to some parliamentary procedure. Second, the set of equilibrium allocations is the same whether the lobbies design the contribution schedules before or after the identity of \( g \) is revealed.

10 While a richer model would replace the veto power of both members with the possibility of member \( q \) triggering a government breakup (via, say, outright dissolution of parliament or via a vote of no-confidence), our qualitative results would still hold if member \( g \)'s costs of breakup were large enough.
a schedule \( \max \left[ \hat{C}_q^y (b_q) - \varepsilon, 0 \right] \), for \( \varepsilon > 0 \) small enough, it does not affect the choice of \( b^q \) and saves money in equilibrium. Therefore \( \hat{C}_q^y (\hat{b}_q^g) = \hat{C}_q^m \).

Also, whenever \( \hat{C}_q^m > 0 \) lobby \( q \) can replace the schedules \( \left[ \hat{C}_q^y (b_q), \hat{C}_q^m \right] \) with \( \max \left[ \hat{C}_q^y (b_q) - \varepsilon, 0 \right] \) and \( \hat{C}_q^m - \varepsilon \), respectively, for \( \varepsilon > 0 \) small enough, and save money in equilibrium; with the new schedules the solution to (3) remains the same and \( q \) gets the same outcome for less contributions. Thus, \( \hat{C}_q^y (\hat{b}_q^g) = \hat{C}_q^m = 0 \). It follows that legislator \( q \) gets no contributions in equilibrium. A similar argument establishes that \( g \) too receives no contributions.

We next show that every \( \hat{b} = \hat{b}^q \in \mathcal{B} \), where

\[
\mathcal{B} = \left\{ b \mid b_k = 0, \ b_k \geq b_k^d, \ b_l \geq b_l^d, \ \sum_i b_i = B \right\},
\]

is an equilibrium allocation. It is enough to construct equilibrium contribution functions that support every point in \( \mathcal{B} \). To this end, take a point \( b^o \in \mathcal{B} \) and the contribution functions \( C_i^o = \varepsilon_i \) and

\[
C_i^q (b_i) = \begin{cases} 
\varepsilon_i & \text{for } b_i \geq b_i^q \\
0 & \text{for } b_i < b_i^q 
\end{cases} \quad \text{for } i \in G,
\]

where \( \varepsilon_i > 0 \). It is easy to see that given these contribution functions, \( b^g_q = b^o_q \) solves (3) for all positive \( \varepsilon_i \)’s. As \( g \) has to offer group \( q \) at least \( b^g_q \) to gain the support of legislator \( q \), group \( q \) secures a minimal budgetary allocation. Consequently, lobby \( g \) can do no better than to design schedules that induce \( B - b^g_q \) at zero cost. The proposed contribution functions achieve this when \( \varepsilon_g \) is as small as possible. Conversely, given the schedules of lobby \( g \), lobby \( q \)’s best response is to offer the above functions with \( \varepsilon_q \) as small as possible. As \( \varepsilon_g \) and \( \varepsilon_q \) both approach zero, the solution of the bargaining game remains constant at \( b^o \). Repeating this argument, we realize that every point in \( \mathcal{B} \) is an equilibrium.\(^{11}\)

These findings are summarized in

**Proposition 2** In every equilibrium of the parliamentary system: (a) the budget allocation equals the coalition’s proposal; (b) for every \( G = \{k, l\} \) there

\(^{11}\)A related multiple-equilibrium result is found in the electoral framework of Persson, Roland and Tabellini (2000).
is a continuum of budget allocations characterized by \( b_t = 0 \) and \((b_k, b_l) = (b, B - b)\) for some \(b_d^k \leq b \leq B - b_d^l\); and (c) contributions equal zero.

How does this outcome depend on the presence of contributing lobbies? As in the section on the congressional system, it is natural to consider the benchmark of direct bargaining by delegates of groups \( k \) and \( l \). With direct representation, bargainer \( i \in G \) seeks to maximize \( H(b_i, N_i) \). When legislator \( g \) wants \( q \) to accept a proposal, she therefore offers \( q \) the default budget \( b_d^q \) and gives the residual to her own group. As a result group \( g \) extracts the entire surplus. Evidently, the group whose representative is the non-proposing member of the coalition, prefers lobbying to direct representation. This group gets its default budget under direct representation, while it gets the same or more under lobbying.\(^{12}\) On the other hand, the group whose representative is the proposing member prefers direct representation, because its bargaining position is stronger in this regime. Finally, group \( t \), whose representative is outside the governing coalition, is indifferent; it gets nothing in either case.

### 2.3 Discussion

Propositions 1 and 2 show that in congressional and parliamentary systems alike, interest groups associated with agenda-setting legislators succeed in biasing the policy outcome in their favor, at little cost in terms of contributions. The benefits appear more evenly distributed in a parliamentary system, however, in which every coalition member obtains a budget allocation at least as large as the default policy. Compared to a setting with bargaining based on direct representation, lobbying introduces multiple equilibria into parliamentary systems. And the group associated with the non-agenda-setting coalition member is better off (at least weakly so). In a congressional system, by contrast, competition between lobbies and non-agenda setting lawmakers enhances the bargaining power of the agenda setter and allows her group to appropriate the entire surplus, independently of the default options. Lobbying unambiguously strengthens powerful politicians and helps the groups that are associated with them.\(^{13}\)

\(^{12}\)Recall that equilibrium contributions equal zero.

\(^{13}\)The different implications for distributive politics in congressional and parliamentary systems are emphasized (in a context of legislative bargaining, but without lobbying) by Diermeier and Feddersen (1998), and (in a context of legislative bargaining and elections) by Persson, Roland and Tabellini (2000).
This characterization is true for a single policy decision. When it comes to the overall distribution of policy benefits, however, the contrast between the two systems may be less stark. Consider, for example, an entire election cycle, in which a number of separate decisions on various policy issues have to be taken. Whenever Congress confers agenda-setting power on every legislator in some decisions, our model predicts a distribution of policy benefits to all groups, despite the fact that every decision in isolation produces an extreme outcome. In the parliamentary system, on the other hand, agenda-setting powers would be split only within the government coalition, largely through the allocation of ministerial portfolios. The ruling coalition will not only stick together for the entire election period, but may also split policy benefits between members in each decision separately, assuming that the costs of breaking up a government are large enough. The ruling coalition’s effective monopoly on the policy agenda implies a larger concentration of policy benefits; the minority group, whose lawmakers are outside the governing coalition, is systematically exploited.\footnote{This point is also made by Diermeier and Feddersen (1998), who also study how the bargaining powers of the coalition members develop over the election cycle.}

As Baron and Ferejohn (1989) emphasize, the decisions controlling the distribution of policy benefits vary across political systems. In congressional systems these decisions are made in legislative bargaining, whereas in parliamentary systems they are made in bargaining within the cabinet but also in bargaining over government formation. Have we not biased the outcome by not studying government formation? We may, but it is unclear in which direction. True, lobbies would compete for the inclusion of their lawmakers in government. But policy-contingent contributions designed to make their lawmakers cheap to include in government may not be time-consistent. Once a government has formed, the lobbies have strong incentives to redesign their contributions, taking account of the interests of other government members and the powers of their own representatives.

## 3 Benevolent Lawmakers

Lawmakers that care only about contributions and not about the well-being of voters are a rare breed. Even purely election-motivated lawmakers should
care about both welfare and contributions.\textsuperscript{15} The better off the voters, the more likely is the reelection of their representative. And the more contributions a legislator has for campaign spending, the more likely her reelection. We cannot provide a unified theory that accounts for elections, lobbying and legislative bargaining. Instead we explore the extent to which our results extend to lawmakers whose objective functions include the welfare of their constituency in addition to contributions.

Suppose that lawmaker $i$ places weight $\beta_i \geq 0$ on the aggregate welfare of her constituency and weight $1 - \beta_i$ on aggregate contributions.\textsuperscript{16} In view of (1) her objective function is

$$
\beta_i [I_i + H(b_i, N_i) - c_i] N_i + (1 - \beta_i) c_i N_i .
$$

For lawmakers to value contributions, $\beta_i$ has to be smaller than $1/2$, which we assume to be the case. To express this objective function in monetary units, we divide it by $1 - 2\beta_i$. The result is

$$
L_i = [\omega_i I_i + \omega_i H(b_i, N_i) + c_i] N_i ,
$$

where $\omega_i = \beta_i / (1 - 2\beta_i)$ is the relative weight on welfare. Section 2 discussed the special case $\omega_i = \beta_i = 0$, for all $i$.

### 3.1 Congressional system

Suppose that the equilibrium allocation in a congressional system is a proposal $b^a$ by the agenda setter. It is straightforward to show that it has to be of the form $b^a_h = B - b^a_h$, $B \geq b^a_h \geq 0$, $b^a_j = 0$, where $h$ is the lawmaker that supports the proposal and $j$ is the remaining lawmaker. Namely, no resources are allocated to $j$’s group, because the agenda setter seeks a minimum-winning coalition. However, since $h$ supports the proposal,

$$
\omega_h H(b^a_h, N_h) + C^w_h (b^a_h) \geq \omega_h H(b^d_h, N_h) + C^w_h .
$$

\textsuperscript{15}See Grossman and Helpman (1996) for a model of electoral competition with special interest groups that has this feature.

\textsuperscript{16}We are thus identifying each lawmaker’s constituency with the lobby group that she is associated with. This fits well only certain types of associations, such as those that lobby for regional support in a majoritarian electoral system with single-member voting districts.
The optimal design of the contribution schedules by group $h$ then implies

$$C^m_h = 0,$$

$$C^a_h (b^a_h) = \omega_h \left[H(b^d_h, N_h) - H(b^a_h, N_h)\right].$$

(6)

The first equality results from the fact that as long as $C^m_h > 0$ group $h$ can reduce its contribution $C^m_h$ and the schedule $C^a_h (\cdot)$ without affecting the inequality in (5). In response, its lawmaker will continue to support the proposal in exchange for lower contributions. Therefore $C^m_h = 0$. To see why the second equality follows, assume that the inequality in (5) is strict. Then group $h$ can reduce the schedule $C^a_h (\cdot)$ and save money without affecting the vote of lawmaker $h$. Therefore, (5) must hold with equality, which implies (6). As contributions are nonnegative, it follows from (6) that

$$b^a_h \leq b^d_h.$$  (7)

Next note that group $h$ can always design schedules that induce lawmaker $h$ to vote against the proposal. The worst allocation group $h$ may obtain in this case is zero. In equilibrium, we must thus have $H(b^a_h, N_h) - C^a_h (b^a_h) \geq H(0, N_h) = 0$, which taking account of (6) implies

$$H(b^a_h, N_h) \geq \frac{\omega_h}{1 + \omega_h} H(b^d_h, N_h).$$

(8)

This is a participation constraint: with optimally designed contribution schedules, the agenda-setter has to offer group $h$ a budget satisfying this inequality. Evidently, whenever lawmakers place positive weight on welfare, the budget allocation to $h$ has to be strictly positive, although it can be smaller than $h$’s default budget. In the special case $\omega_h = 0$ (no weight on welfare) this budget allocation can be zero, as in the previous section.

Next consider group $j \notin \{a, h\}$. To save space, assume that the agenda-setter always prefers larger allocations to group $a$. Then group $j$ is willing and able to compete with group $h$ for budgetary support. For it can induce its lawmaker to support a proposal that gives $j$ a budget allocation $b^a_h$ minus a penny. And if it designed its schedules in this way, the agenda setter would prefer to offer group $j$ the allocation $b^a_h$ minus a penny rather than to offer group $h$ the budget $b^a_h$. It therefore has to be the case that group $j$ does

\footnote{Namely, $\omega_a H(b^a_a, N_a) + C^a_h (b^a_h)$ is increasing in $b^a_h$. This is necessarily the case when $\omega_a > 0$ and the contribution function $C^a_h (\cdot)$ is nondecreasing.}
not want to induce the agenda-setter to propose this alternative allocation. To induce the alternative allocation group $j$ has to offer contributions that satisfy $\omega_j H(b_h^a, N_j) + C^u_j (b_h^a) \geq \omega_j H(b_j^d, N_j) + C^u_j (b_j^d)$. The most efficient way to do it is by offering $C^u_j (b_h^a) = \omega_j \left[ H(b_j^d, N_j) - H(b_h^a, N_j) \right]$. For this strategy not to pay off, it has to be that $H(b_h^a, N_j) - C^u_j (b_h^a) \leq 0$, or

$$H (b_h^a, N_j) \leq \frac{\omega_j}{1 + \omega_j} H (b_j^d, N_j).$$

Moreover, when group $h$ designs its contribution schedules it can induce the largest $b_a^b$ that satisfies this inequality in addition to (7), and, in view of (6), it is in its interest to do so. Defining $b_j^c$ as the budget that satisfies

$$H (b_j^c, N_j) = \frac{\omega_j}{1 + \omega_j} H (b_j^d, N_j),$$

this equation determines $b_j^c$ uniquely. It implies $b_j^c \leq b_j^d$, and therefore

$$b_h^a = \min \{b_j^c, b_d^h\}$$

as long as (8) is also satisfied. It follows that group $h$'s equilibrium allocation exceeds neither group $h$'s nor group $j$'s default allocation.

Conditions (8)-(10) determine which lawmaker supports the agenda-setter’s proposal (namely, who $h$ is) and what budget is allocated to her group. A simple way to identify the role of each group is to define budgets $b_i^c$ for $i \neq a$ satisfying the analog of (9), namely

$$H (b_i^c, N_i) = \frac{\omega_i}{1 + \omega_i} H (b_i^d, N_i) \quad \text{for} \ i \neq a.$$  

The budget $b_i^c$ is a measure of how cheap it is for the agenda-setter to elicit the support of lawmaker $i$, because according to (8) the agenda-setter has to offer group $i$ at least $b_i^c$ for this purpose. In equilibrium, the agenda-setter seeks the support of the group that is cheapest: $h = \arg\min_i \{b_i^c\}_{i \neq a}$, and the budget allocation to group $h$ equals $b_j^c$, unless $b_j^c \geq b_h^d$, in which case $h$ gets its default allocation.\(^\text{18}\) This fully characterizes the equilibrium allocation of the budget. What remains is to complete the characterization of contributions.

\(^\text{18}\)It is easy to see that if $h$ is the group with the larger value of $b_i^c$, then conditions (8)-(10) cannot be satisfied simultaneously.
We have seen that group $j$, whose lawmaker is outside the winning coalition, gets zero. Group $j$ therefore makes no contributions; if it did, it could cut them to zero, keeping its allocation at zero, which is already as bad as it can get. We have also seen that group $h$, whose lawmaker supports the agenda-setter, makes contributions according to (6). For the contributions of group $a$, we can use the argument from Section 2 that the agenda-setter gets no contributions. For example, group $a$ can offer its lawmaker zero in case she defeats the equilibrium allocation and $C^a_y(b_a) = \min \{0, H(b_a, N_a) - H(B - b_h, N_a)\}$ in case she supports it, where $b^0_h$ is given by (10). Under these circumstances lawmaker $a$ can do no better than to propose the equilibrium allocation and vote in its favor.

These results are summarized in

**Proposition 3** In every equilibrium of the congressional system: (a) the budget allocation equals the agenda setter’s proposal; (b) the agenda-setter seeks the support of lawmaker $h$ that is cheapest to elicit; namely, $h = \arg\min_i \{b^c_i\}_{i \neq a}$, where $b^c_i$ is defined in (11), and does not seek the support of lawmaker $j$, $j = \arg\max_i \{b^c_i\}_{i \neq a}$; (c) the budget allocation is $b_j = 0$, $b_h = \min \{b^c_j, b^d_h\}$ and $b_a = B - b_h$; and (d) the agenda setter and lawmaker $j$ get zero contributions, while lawmaker $h$ gets $c_h = \omega_h \left[ H(b^d_h, N_h) - H(b_h, N_h) \right]$.

To see what contribution functions could support such an equilibrium, we provide an example. Let $b^* \in \mathcal{B}$ be the equilibrium allocation and set

\[ C^*_i = 0 \quad \text{for} \quad i = 1, 2, 3, \]

\[ C^*_j(b_j) = H(b_j, N_j), \]

\[ C^*_h(b_h) = \max \left\{ 0, H(b_h, N_h) + \omega_h H(b^d_h, N_h) - (1 + \omega_h) H(b^0_h, N_h) \right\}, \]

\[ C^*_a(b_a) = \max \left\{ 0, H(b_a, N_a) - H(B - b^0_h, N_a) \right\}. \]

It is easy to verify that these are (truthful) equilibrium contribution functions.

A final point to note is that Proposition 1 is a special case of Proposition 3: when the relative weight on welfare approaches zero (i.e., $\omega_h \to 0$), both propositions describe the same equilibrium properties. In particular, $b^*_{h} \to 0$ and $c_{h} \to 0$. On the other hand, for $\omega_h$ large enough, we obtain the legislative bargaining solution: $b^*_{h} \to b^d_h$ and $c_{h} \to 0$. Interestingly, contributions are
zero when either the relative weight on welfare is negligibly small or very high. For intermediate values, group \( h \) makes positive contributions.

To see the intuition behind these results, consider a symmetric special case where the two competing groups have the same size and the same default allocations; i.e., \( N_i \) and \( b_i^d \) are the same for \( i \neq a \). Proposition 3 then implies that the lawmaker of group \( h \), who forms a majority with the agenda-setter, is the lawmaker putting the lowest weight on welfare relative to contributions (\( \omega_h < \omega_j \)). Lawmaker \( h \) may anticipate a tighter electoral race, or be more popular relative to her opponent.\(^{19}\) Suppose, alternatively, that \( \omega_i \) and \( N_i \) are the same for \( i \neq a \). Then \( h \) is the group with the lowest value of \( b_i^d \), i.e., the group with the less attractive outside option. Evidently, the composition of the majority depends on characteristics of the lawmakers and the default policies. Be that as it may, the agenda-setter elicits the support of the lawmaker whose vote is cheapest to get.\(^{20}\)

Interestingly, only lawmaker \( h \), who supports the agenda-setter, obtains contributions. Due to the competition with group \( j \), group \( h \) needs to give its representative positive contributions to induce her support for the equilibrium proposal. But the agenda-setting lawmaker \( a \) does not need monetary incentives, as she is better off with the equilibrium than with the default allocation. Finally, group \( j \), the least attractive coalition partner, does not waste any contributions on its lawmaker.

### 3.2 Parliamentary system

Now return to the parliamentary system with a coalition of lawmakers \( k \) and \( l \), namely, \( G = \{ k, l \} \), but \( t \) left out of the coalition. As before, there are multiple equilibria. Moreover, every point in the previous equilibrium set \( B \) is still an equilibrium allocation.

To see why, let \( b^* \in B \), and consider the following contribution functions

\(^{19}\)See Grossman and Helpman (1996) for an analysis of the determinants of the relative weights \( \omega_i \) and the role of popularity in their determination.

\(^{20}\)When groups differ in size, the interaction between size and budget allocations can break the simple association between the default option and how cheap it is to elicit the support of a lawmaker. But when the benefit function has the separable form \( H(b, N) = H^1(b)H^2(N) \), we find again that it is cheapest to elicit the support of the lawmaker who either puts a lower relative weight on welfare or whose group has the lower default allocation.
for \(k\) and \(l\) (as before \(t\)'s contribution functions are of no interest):

\[
C_i^g (b_i) = 0 \quad \text{for } i \in G,
\]

\[
C_i = \omega_i \left[ H (b_i^q, N_i) - H (b_i^d, N_i) \right] \quad \text{for } i \in G.
\]

With these contribution functions, lawmaker \(g \in G\) cannot offer her coalition partner \(q\) less than \(b_q^g\), as such an offer would be rejected in favor of the default allocation.\(^{21}\) But lawmaker \(g\) would like to offer \(q\) as little as possible, because her utility is increasing with the allocation to group \(g\). Therefore \(g\) offers \(b_q^g\) to \(q\), giving the residual to her own group, and this offer is approved.

Finally, group \(h\) cannot improve its lot by designing different contribution functions, given the contribution functions of \(g\), because lawmaker \(g\) prefers the default allocation to any budget giving her group less than \(b_q^g\). By the same token, group \(g\) cannot design different contribution functions that improve its allocation in view of the contribution functions of \(h\). Thus we have an equilibrium with zero contributions. The same reasoning as before establishes that equilibrium contributions would equal zero, even if some other contribution functions were used to support the equilibrium allocation.

## 4 More general policies

What happens when the total budget \(B\) is not fixed and the agenda setter or coalition government can propose budget size in addition to its allocation? What happens when the available policy instruments includes universal public goods, in addition to the local public goods? To answer such questions we need to treat the more general case in which the well being of every group \(i\) depends on the whole policy vector \(b\) and not only by the group-specific allocation \(b_i\).

Let \(J_i\) be the net income and \(Z_i (b, N_i)\) the net benefit function of group \(i\) when the government implements a policy vector \(b\). The contribution schedules \(C_i^g (\cdot)\) can be designed as functions of \(b\). A vector \(b^d \geq 0\) continues to represent the default option. For simplicity, we return to our original

\(^{21}\)By supporting an allocation with \(b_q\) lawmaker \(q\) attains the utility level \(\omega_q H (b_q, N_q)\), because she gets no contributions. By voting against the proposal, however, she attains the utility level \(\omega_q H (b_q^d, N_q) + C_q^g = \omega_q H (b_q^g, N_q)\). It follows that she will not support a proposal that gives her less than \(b_q^g\).

http://www.bepress.com/bejeap/advances/vol1/iss1/art3
assumption that lawmakers care only about contributions. We start by analyzing this general case, but return to specific examples at the end of the section.

4.1 Congressional policy

The policy game is the same as in Section 2, except that now the agenda-setter can propose an allocation \( b^a \in B_F \), where \( B_F \) represents a feasible set of the policy instruments that takes account of such constraints as how much various groups can be taxed. Repeating the arguments in Section 2 we can now reaffirm, in spirit, the results in Proposition 1. Namely, in equilibrium there are no contributions, the agenda setter’s proposal wins a majority, and the agenda setter chooses a policy that suits her group best; i.e.,

\[
    b^a = \arg\max_{b \in B_F} Z_a (b, N_a).
\]

The reasons are the same as in Section 2. The agenda setter extracts the entire surplus, because the other lobbies compete for her favors through contributions to their lawmakers. This is fully exploited by the group associated with the agenda setter, as it can design its contribution schedules to appropriate the entire surplus from its relationship with the agenda setter. For example, a contribution schedule

\[
    C_y^a (b) = \max [Z_a (b, N_a) - Z_a (b^o, N_a), 0]
\]

ensures that the agenda setter proposes \( b^a = b^o \) if she can secure a majority for the proposal. And a majority is indeed secured for such a proposal, by an argument along the lines of Section 2. Lobby \( a \) is thus best off when \( b^o \) maximizes its net benefit \( Z_a (b, N_a) \).

4.2 Parliamentary policy

Consider a coalition \( G = \{k, l\} \) where legislator \( g \in G \) makes a proposal \( b^g \) that \( q \in G, q \neq g \), can accept or reject. If accepted, the government

\[\text{An interesting extension would be to study a multistage legislative process with separation of power between different legislators, such as one proposing a tax rate and another proposing how to spend the revenue. The results in Persson, Roland and Tabellini (2000) suggest that this will have a marked effect on the outcomes.}\]
implements \( b^g \), if rejected it implements the default allocation \( b^d \). Under these circumstances \( g \)'s proposal maximizes \( g \)'s contributions subject to \( q \)'s contributions being at least as large as \( C^n_q \):

\[
b^g = \arg \max_{b \in B} C^g_q (b) \text{ subject to } C^g_q (b) \geq C^n_q .
\]

Repeating the arguments from Section 2 establishes that equilibrium contributions equal zero. What about the equilibrium allocations \( b \)?

As before, there are many equilibrium allocations and many contribution functions support such equilibria. In fact, more equilibria are now possible, some of which are inefficient for lobbies \( k \) and \( l \) that are represented in the coalition. All the equilibrium allocations have, however, to provide both groups with net benefits at least as large as the default policy. The set of equilibrium allocations is thus contained in the intersection of the set of allocations which the two groups prefer to their default options. If \( \mathcal{B}_i (\hat{b}) = \{ b \in \mathcal{B} \mid Z_i (b, N_i) \geq Z_i (\hat{b}, N_i) \} \) is the set of feasible allocations that lobby \( i \) weakly prefers to \( \hat{b} \), the set of equilibrium allocations is contained in \( \mathcal{P} (b^d, G) = \mathcal{B}_k (b^d_k) \cap \mathcal{B}_l (b^d_l) \). Amongst these a subset \( \mathcal{E} (b^d, G) \) is efficient from the point of view of the coalition members, namely

\[
\mathcal{E} (b^d, G) = \left\{ \mathbf{b}' \mid \mathbf{b}' = \arg \max_{b \in \mathcal{P} (b^d, G)} \left[ \alpha_l Z_l (b, N_l) N_l + (1 - \alpha_l) Z_k (b, N_k) N_k \right] \right\},
\]

for some \( 0 \leq \alpha_l \leq 1 \). This subset belongs to the equilibrium set. For example, an allocation \( b^o \in \mathcal{E} (b^d, G) \) and the truthful contribution functions

\[
C^o_j = 0 \quad \text{and} \quad C^g_j (b) = \max [Z_j (b, N_j) - Z_j (b^o, N_j), 0] \quad \text{for} \quad j = k, l
\]
describe an equilibrium.

### 4.3 Example

To see how this general treatment works in a specific application, consider the budget allocation problem with taxation. An individual’s utility is given by

\[
u_i = J_i + H (b_i, N_i) - \frac{1}{N} \sum_{j=1}^{3} b_j - c_i .
\]

(12)
Every district gets a budget of $b_i$ and an equal lump-sum tax is imposed on every individual in every group. $J_i$ denotes a group’s income net of other taxes. In this case the net benefit function is $Z_i(b, N_i) = H(b_i, N_i) - \sum_{j=1}^{3} b_j/N$ for all $i$. As a benchmark, we note that it is socially efficient to choose $b_i$ so as to maximize the difference between social benefits and social costs, namely $N_iH(b_i, N_i) - b_i$. But this allocation is not attained in our polity, independently of whether it has a congressional or a parliamentary system.

By the results above, a congressional system leads to a budget allocation $b_a = \arg\max_{b \geq 0} \left[N_aH(b, N_a) - \frac{Na}{N}b\right]$ and $b_i = 0$ for $i \neq a$.

Evidently, the budget spent on the groups $i \neq a$ is too small. On the other hand, the budget spent on group $a$ is too large. Group $a$ sees its cost of spending as only a fraction $N_a/N$ of the true cost, as taxes are paid by all, and overspends because of this “common pool problem”. Finally note that the budget depends on the size of group $a$. If the marginal benefit of $b_a$ is increasing in group size, then the budget is larger the larger group $a$. And if the marginal benefit of $b_a$ declines with group size, then the budget is larger the smaller the group.\footnote{The equilibrium budget is related to group size via $\partial H(b_a, N_a)/\partial b_a = 1/N$ (recall that $H(\cdot)$ is concave in $b$). Therefore $b_a$ rises with $N_a$ if and only if the left-hand side rises in $N_a$.}

Whether aggregate spending is too high depends on relative group sizes and the concavity of $H(\cdot)$.

In a parliamentary system, every allocation in $E(b^d, G)$ gives a zero budget to group $t$ whose lawmaker is outside the coalition; $b_t = 0$ for $t \notin G$. In addition, allocations in $E(b^d, G)$ that are interior for coalition members satisfy

$$\alpha_t N_i \frac{\partial H(b_t, N_i)}{\partial b_t} = (1 - \alpha_t) N_k \frac{\partial H(b_k, N_k)}{\partial b_k} = \alpha_t N_i + (1 - \alpha_t) N_k / N.$$  (13)

For every pair of weights $(\alpha_t, 1 - \alpha_t)$ the spending levels are not efficient. To see this, note that the socially optimal spending levels satisfy $N_i\partial H(b_i, N_i)/\partial b_i = 1$ for $i \in G$. It follows immediately that group $t$, whose legislator is outside the coalition, receives too little $b_t$ (i.e., zero). But members of the coalition also do not receive efficient levels of $b_i$. Take, for example, the case in which $\alpha_t = 1/2$. In this event (13) implies $N_i\partial H(b_i, N_i)/\partial b_i < 1$ for $i \in \{l, k\}$, in which case coalition members allocate too much $b_i$ to their groups.
5 Other extensions

We have shown in Sections 3 and 4 how the simple model of Section 2 can be generalized. Yet, even these generalizations rest on strong assumptions. In this section we briefly discuss how some of the remaining assumptions can also be relaxed and possible consequences of these modifications.

5.1 Alternative interactions between lobbies and lawmakers

One troubling feature of our model is the tight association between interest groups and lawmakers. We know from the political economics literature that institutional features affect outcomes, and we therefore expected the relaxation of this assumption to have a similar effect. Grossman and Helpman (2001, chapter 9) examine a variety of institutions within which interest groups lobby legislators. In one case, which is close to our congressional system, they allow two interest groups to compete for both the policy proposal and the votes of legislators (see section 3). There are two stages. In the first stage the lobbies propose contributions to the agenda setter. Then, after the agenda-setter has made a proposal, the lobbies offer contributions to other legislators. If the agenda-setter’s proposal wins a majority its proposal is adopted. Otherwise the status quo prevails. As in our model there are two lawmakers in addition to the agenda setter.

Grossman and Helpman show that whenever the two lobbies care only about contributions and they have conflicting preferences over the contested policies; namely, the policy proposed by the agenda-setter and the status quo, there is no pure strategy equilibrium at the voting stage of the game. The group that prefers the agenda-setter’s proposal needs only one extra vote in order to secure its preferred policy while the group that prefers the status quo needs to amass two votes in order to defeat the proposal. These features of the conflict are consistent only with a mixed strategy equilibrium. It follows that lobbying the agenda-setter in the first stage of the game secures a desired outcome only with some probability, because the probability of defeat at the voting stage is typically positive. Evidently, allowing groups to freely lobby all legislators significantly complicates the problem. To be sure, these are interesting complications, but their effects on the comparison of parliamentary and congressional systems have yet to be explored.
5.2 Open rule bargaining

We assumed that in the congressional system the agenda setter can make a single take-it-or-leave-it offer to the other legislators. While some congressional committees do have strong gate-keeping powers, it may be more realistic to assume multi-round bargaining where other legislators have an opportunity to amend the agenda setter’s proposal. Exercise 7.5 in Persson and Tabellini (2000) deals with the case of such multi-round open-rules, where lobby groups can make contributions in every round, under the simplifying assumption that interest groups use truthful contribution schedules. This leads to a more equal distribution of benefits. High enough discount factors yield minimum-winning-coalition-type equilibria in which the group associated with the coalition partner of the agenda setter obtains positive policy benefits, but low discount factors yield universalism-type equilibria where all groups obtain some benefits. The introduction of lobbies makes minimum-winning-coalition-type equilibria more likely; ceteris paribus they prevail over universalism-type equilibria for a considerably larger set of discount factors than under pure legislative bargaining. Brocas et al. (2001) provide further discussion of this issue.

5.3 Mobility across groups

The analysis in Sections 2 through 4 suggests that political systems do not treat all groups equally. Groups associated with legislators who are devoid of agenda-setting power are less able to extract policy favors, and congressional systems have more such groups. Our analysis suggests that individuals have clear motives in joining groups associated with lawmakers possessing agenda-setting power, or lawmakers more likely to acquire such power. The search for higher utility can produce shifts in membership that are driven by expectations of political power.

In Helpman and Persson (1998) we provide an explicit analysis of inter-group mobility, using alternative assumptions about the stage in which an individual can choose his affiliation, thereby capturing different degrees of group inertia. However, the endogenous composition of groups and the allocation of agenda-setting power always produce an equilibrium of the type discussed in this paper. The results suggest some testable implications. For example, countries that experience large and frequent shifts of political power should, ceteris paribus, have more mobility than countries with political sys-
tems characterized by a stable power structure.

6 Concluding comments

Policy formation in representative democracies entails legislative bargaining as well as influence peddling by special interest groups. Whereas each of these activities has received much attention, the interaction between them has not. We have shown, however, that this interaction is important. It therefore deserves close examination.

Our analysis has been confined to very simple structures of congressional and parliamentary systems. It is therefore difficult to assess, at this point, the robustness of the main results. As is well known from other models of special interest politics, institutional details — such as the procedures for legislative bargaining and for government formation and dissolution — can have a marked effect on outcomes. But this does not detract from the main argument, which is that the interaction between legislative bargaining and lobbying is of prime importance for an understanding of policy formation.

We have seen that a congressional system allocates policy benefits more unevenly than a parliamentary system. Moreover, lobbying by special interest groups amplifies this skewness in a congressional system and moderates it in a parliamentary system. These results are likely to survive procedural modifications, because they derive from the greater separation of proposal powers and the lesser legislative cohesion in congressional systems, and these seem to be inherent differences between the two systems. But the distribution of policy benefits over an electoral cycle may, nevertheless, be more concentrated in parliamentary systems, due to the concentration of proposal-making powers in the hands of the coalition and the incentives for this coalition to stick together.
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